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VIRTUAL EYE-LIFE GUARD FOR SWIMMING POOLS TO DETECT ACTIVE DROWNING

LITERATURE SURVEY

Drowning behaviour detection in swimming pool based on deep learning

In order to quickly help lifesavers judge whether people are drowning in the swimming pool, this paper proposes one efficient behaviour recognition approach by means of video sequences of underwater. First, by analysing the spatial distribution of swimming pool when swimmers are normally swimming, the data labelling and swimmer detection methods are determined. Second, a behaviour recognition framework of swimmers on the basis of YOLOv4 algorithm (BR-YOLOv4) is proposed in this paper. The spatial relationship between the location information of the target and swimming/drowning area of swimming pool is analysed to further determine the swimmer's drowning or swimming behaviour. All the results show that the method proposed in this paper meets the real-time detection requirements and does well in swimmer behaviour recognition and provides technical support for reducing drowning accidents in public swimming pools.

Detection of early dangerous state in deep water of indoor swimming pool based on surveillance video

Early detection of dangerous condition in the deep-water zone of swimming pool based on surveillance. This paper propose feature extraction, feature expression and assessment criteria, including a method for evaluating normal swimming speed based on the time series of swimmers, a method for assessing an upright state that is not limited by the camera angle, and the rules for assessing state. They collected real-life data from the swimming pool and conducted related experiments. This method can easily and efficiently detect the swimmer who is in danger at an early stage and provide necessary rescue reminders to lifeguards.

Automated and Intelligent System for Monitoring Swimming Pool Safety Based on the IoT and Transfer Learning

Integrating the net of Things and laptop vision has been utilised in pool machine-controlled police work systems. many studies are projected to beat off-time police work drowning incidents supported employing a sequence of videos to trace human motion and position. This paper proposes Associate in Nursing economical and reliable discoverion system that utilizes one image to detect and classify drowning objects, to stop drowning incidents. The projected system utilizes the IoT Associate in Nursingd transfer learning to produce an intelligent and automatic answer for off-time watching pool safety. additionally, a specialised transfer-learning-based model utilizing a model pretrained on "ImageNet", which may extract the foremost helpful and sophisticated options of the captured image to differentiate between humans, animals, and alternative objects, has been projected. the most aims of this is often to scale back human intervention by process and causing the classification results to the owner's mobile device.

Automated Vision-based Surveillance System to Detect Drowning Incidents in Swimming Pools

This paper projected a period system which will track swimmers during a pool victimisation machine learning techniques and prevents drowning accidents is projected. The system consists of a Raspberry Pi with the Raspbian software, a Pixy camera, associate degree Arduino Nano board, stepper motors, associate degree device, and motor drivers. The projected system relies on the colour-based algorithmic rule to position and rescue swimmers United Nations agency ar drowning. The device then sends associate degree alarm to the lifeguards. The results from experiments indicate that the system incorporates a distinctive capability to watch and track swimmers, thereby sanctionative it to mitigate and curb the quantity of deaths by drowning

Computer Vision Enabled Drowning Detection System

The current systems expected to handle the matter of guaranteeing safety at swimming pools have vital issues thanks to their technical aspects, like underwater cameras and method aspects like the requirement for human intervention within the rescue mission. the utilization of an automatic visual-based observation system will facilitate to scale back drownings and assure pool safety effectively. This study introduces a revolutionary technology that identifies drowning victims in an exceedingly minimum quantity of your time and dispatches an automatic drone to save lots of them. victimization convolutional neural network (CNN) models, it will discover a drowning person Whenever such a scenario like this is often detected, the expansive tube-mounted self-driven drone can proceed a rescue mission, sounding AN alarm to tell the close lifeguards. The system conjointly keeps an eye fixed out for doubtless dangerous actions that would lead to drowning. This system's ability

to save lots of a drowning victim in below a second has been incontestible in epitome experiments' performance evaluations.

The Swimmers Motion Detection Using Improved VIBE Algorithm

This paper proposed a novel method for drowning person detection in the swimming pool using video images. For background extraction and to update the exact motion area from the whole video using frame by frame difference vibe algorithm is used. Static and dynamic features are detected to recognize the normal swimmer and drowning person. The present invention discloses videobased swimming pools drowning event detection method. In the detection process Time of map (Tom), the method is used to improve the traditional VIBE result. The sequence of video images of the swimming pool is collected in real-time by using a camera installed above the water surface, which mainly includes three steps of swimmer's detection, swimmers tracking and drowning person behaviour analysis. In the aspect of swimmer detection, an improved VIBE swimmer detection algorithm is proposed, and the algorithm is used to determine the swimmer's position. The swimmer tracking and particle filter based on the colour distribution model which is combined with the nearest neighbour data association algorithm to achieve tracking of multiple swimmers. In the analysis of drowning behaviour, three characteristics of drowning behaviour are proposed to determine whether the swimmer is drowning. The invention can monitor the swimming pool in real-time through the camera installed above the water surface in a real public swimming place, and automatically detect the drowning person, which has great engineering application value.

A novel drowning detection method for safety of swimmer]

Effective drowning detection strategies square measure essential for the security of swimmers. during this paper, a completely unique sort of drowning detection methodology addressing several limitations of prevailing drowning detectors is projected. The projected methodology ensures detection of drowning and coverage at the sooner stages. The projected drowning detection methodology is additionally a generic answer that suites totally different water bodies from pools to oceans, associate degreed an economically viable methodology helpful for each low- and middle-income countries. The example of the drowning detection methodology is developed and incontestible and model of the system is simulated in Proteus style suite. The results of the simulation and hardware experimentation are rumored.

DEVELOPMENT OF INTERNET OF THINGS (IOT) BASED ANTI-DROWNING DEVICE

This study targeted on the event of associate degree IoTbased anti-drowning device to scale back the loss of lives to drowning. Agile methodology was adopted for this work. the planning and its implementation created a wristband transmitter strap and attendant alert modules with a pulse reader, a GPS huntsman, Arduino Nano and professional mini, and a red liquid substance to find a drowning person exactly. The device schematic was simulated on Proteus software system and coded mistreatment Arduino IDE. The elements were coupled and tested, and therefore the results showed that abnormal heartbeats between 0-60

and higher than one hundred twenty triggered associate degree alert for help. The system desires a stable net affiliation for its operations and is deployed to immediate watching, time period chase, and fast location of victims

The Swimmers Motion Detection Using Improved VIBE Algorithm

Swimming is one of the best exercises which helps to reduce stress.However, Swimmers may difficult to breath because of lose balance or face difficulty because of lack of training and so on leads to drowning and often leads to death.So,many researchers tried inventions to detect the drowning person but their accuracy is not up to the mark . This paper proposed a swimmers motion detection based on motion detection algorithm (VIBE algorithm) to detect the drowning person. An improved VIBE swimmer detection algorithm is proposed, and the algorithm is used to determine the swimmer's position..First ,Images captured by a camera then change the images into Gary scale images after that background model initializing then background judgment technique and update background Model and foreground feature determination. When the moving target exists in the first frame, the improved VIBE base target detection algorithm eliminates the ghosting noise and processed to detect the person. This algorithm detect the drowning person with exact position but it still needed to improve some deficiencies.

DEVELOPMENT OF INTERNET OF THINGS (IOT) BASED ANTI-DROWNING DEVICE

This study focused on the development of an IoT based anti-drowning device to reduce the loss of lives to drowning. Agile methodology was adopted for this work. The design and its implementation created a wristband transmitter strap and lifeguard alert modules with a pulse reader, a GPS tracker, Arduino nano and Pro Mini, and a red liquid substance to locate a drowning person precisely. The device schematic was simulated on Proteus software and coded using Arduino IDE. The components were coupled and tested, and the results showed that abnormal heartbeats between 0-60 and above 120 triggered an alert for assistance. The system needs a stable internet connection for its operations and is deployed to immediate monitoring, real-time tracking, and quick location of victims.